FCC 93-30

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Implementation of Section 17	)	
of the Cable Television	)	ET Docket No. 93-7
Consumer Protection and	)	
Competition Act of 1992	)	
	)	
Compatibility Between	)	
Cable Systems and Consumer	)	
Electronics Equipment	)	

NOTICE OF INQUIRY

Adopted: January 14, 1993 ; Released: January 29, 1993

Comments Due: March 22, 1993
Reply Comments Due: April 21, 1993

By the Commission:

INTRODUCTION

1. By this inquiry, the Commission seeks to obtain information regarding means of assuring compatibility between consumer electronics equipment and cable systems. This action is the first step towards our implementation of Section 17 of the Cable Television Consumer Protection and Competition Act of 1992 (1992 Cable Act).[1] The objective of this portion of the 1992 Cable Act is to ensure that cable subscribers will be able to enjoy the full benefits and functions of their television receivers and video cassette recorders (VCRs) when receiving programming from cable systems, consistent with the need to prevent theft of cable service. The information obtained through this inquiry will form the basis for a report to Congress and subsequent rule making to develop appropriate regulations to implement the provisions of Section 17.

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[1] See Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460, (1992), §17. This proceeding is limited to issues involved in implementation of Section 17 of the 1992 Cable Act. We are addressing the implementation of other portions of this new legislation in separate proceedings.

BACKGROUND

2. Section 17 of the 1992 Cable Act adds a new Section 624A to the Communications Act that addresses compatibility between consumer electronics equipment and cable systems.[2] In Section 624A(a), Congress makes the following findings with regard to this issue:[3]

- Television receivers and video cassette recorders often contain premium features and functions that are disabled or inhibited because of cable scrambling, encoding, or encryption and by the use of cable devices, such as converters and remote control units, needed to receive programming;

- Consumers will be less likely to purchase, and electronics manufacturers will be less likely to develop, manufacture, or offer for sale, television receivers and video cassette recorders with new and innovative features and functions, if these problems are allowed to persist; and,

- Cable operators should use technologies that will prevent signal thefts while permitting consumers to benefit from the features and functions contained in such television receivers and video cassette recorders.

3. Section 624A(b) specifies that, within one year of the enactment of the legislation, the Commission, in consultation with representatives of the cable and consumer electronics industries, must report to Congress on means of assuring compatibility between TV sets, VCRs and cable systems, consistent with the need to prevent theft of cable service.[4] This section also provides that within 180 days of that report, the Commission must issue such regulations as are necessary to ensure compatibility between consumer electronics equipment and cable systems. Section 624A(b) further states that in issuing these rules, the Commission shall consider whether and under what circumstances to permit cable systems to use scrambling, except that the Commission shall not limit the use of scrambling

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[2] See Section 624A, Section 17 of the 1992 Cable Act, supra.

[3] See Section 624A(a), Section 17 of the 1992 Cable Act, supra.

[4] See Section 624A(b)(1), Section 17 of the 1992 Cable Act, supra.

technology where it does not interfere with the functions of subscribers' TV receivers or VCRs.[5]

4. Section 624A(c) specifies that, in developing the rules required by Section 624A(b), the Commission is to consider:[6]

- The costs and benefits to consumers of imposing compatibility requirements on cable operators and TV manufacturers in a manner that, while providing effective protection against theft or unauthorized reception of cable service, will minimize interference with or nullification of the special functions of subscribers' television receivers or VCRs, including functions that permit the subscriber to--
  -- watch a program on one channel while simultaneously using a VCR to tape a program on another channel;
  -- use a VCR to tape two consecutive programs that appear on different channels; and,
  -- use advanced television picture generation and display features, and;
- The need for cable operators to protect the integrity of the signals transmitted by the cable operator against theft or to protect such signals against unauthorized reception.

5. Section 624A(c) further provides that the equipment compatibility regulations prescribed under Section 624A shall include:[7]

- Technical requirements with which a television receiver or VCR must comply in order to be sold as "cable compatible" or "cable ready";
- Requirements that cable operators offering channels whose reception requires a converter unit--
  -- notify subscribers that they may not be able to use the special features of their TV receivers and VCRs;
  -- to the extent technically and economically feasible, offer subscribers the option of having all other channels delivered directly to the subscribers' TV receivers or VCRs without passing through the converter unit;

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[5] See Section 624A(b)(2), Section 17 of the 1992 Cable Act, supra.

[6] See Section 624A(c)(1), Section 17 of the 1992 Cable Act, supra.

[7] See Section 624A(c)(2), Section 17 of the 1992 Cable Act, supra.

- Rules to promote the commercial availability, from cable operators and retail vendors that are not affiliated with cable systems, of converter units and of remote control devices compatible with converter units;
- Requirements that cable operators who offer subscribers the option of renting a remote control unit--
  -- Notify subscribers that they may purchase a remote control from any source that sells such devices;
  -- Specify the types of remote control units that are compatible with the converter unit supplied by the cable operator; and,
- Prohibit a cable operator from taking any action that prevents or in any way disables converter units from operating with commercially available remote controls.

6. Finally, Section 624A(d) requires the Commission to review periodically and, if necessary, modify the regulations issued pursuant to this section in light of actions taken in response to the regulations and to changes in cable systems, television receivers, VCRs and related technology.

7. Under the Commission's current rules, cable systems are subject to technical standards that specify minimum performance with regard to the quality of NTSC (or similar format)[8] video signals provided at subscriber terminals; delivery of closed captioning information; and signal leakage limits.[9] Related rules specify requirements for monitoring and measuring technical performance and resolving any interference resulting from cable system operation.[10] The Commission's rules currently do not address compatibility between cable systems and extended features of subscribers' TV sets, VCRs and related equipment.[11]

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[8] Some cable systems disassemble the NTSC video signal for transmission through their plant. The disassembled signal is reassembled prior to its delivery to subscribers. The reassembled signal is not in the NTSC format in all respects. However, it can be received and displayed by current TV receivers and is subject to our cable technical standards.

[9] See 47 C.F.R. §76, Subpart K.

[10] Id.

[11] Our existing rules only require that the cable television channels delivered to a subscriber's terminal be capable of being received and displayed by receivers intended for reception of off-the-air reception of broadcast TV signals, as authorized under Part 73 of our rules.

DISCUSSION

8. Problems between cable systems and consumer television equipment generally tend to arise from conflicts between new features in consumer television equipment and the techniques used by cable systems to address security and other technical operating considerations. Many TV receivers, VCRs and related consumer television equipment on the market today include features intended to allow them to be connected directly to a cable service and to tune to channels across frequency ranges used by many cable systems. Manufacturers typically market equipment with these features as "cable compatible" or "cable ready." In addition to cable ready features, many higher-priced units of consumer television equipment also include a variety of other special features that allow users to make use of multiple program channels.[12]

9. Cable systems typically use a variety of techniques to address security and important technical considerations. As a result of cable systems' use of these techniques, the manner in which cable service is delivered to subscribers often frustrates the use of special features that make use of multiple program signals. This tends to occur most often where some or all of the cable signals are scrambled or otherwise encrypted and the cable system provides service through a cable terminal device, or "cable converter," that provides a single channel of programming to the consumer's equipment.[13] In such cases, tuning to the full range of channels is accomplished through the converter. Because there are no standards for the capabilities of cable ready equipment and because cable systems tend to vary in the frequencies they use for delivery of service, equipment designated as "cable ready" by manufacturers in many cases is not able to tune all of the channels of a given cable system. Similarly, the converters used by cable systems often preclude proper operation of the remote control features of consumer television equipment.

10. The new Section 624A of the Communications Act requires that the Commission study these compatibility issues and develop

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[12] For example, VCRs typically are equipped to allow a user to view one program channel while recording another channel at the same time. Many VCRs also can be programmed to record consecutive programs that appear on different channels. In addition, some television sets incorporate advanced "picture in picture" display features that allow simultaneous viewing of the video of two or more different program channels.

[13] Cable systems also use converter boxes to align channels, to cure direct pick-up interference problems from strong radio service signals and to control signal leakage.

appropriate regulations to assure compatibility between cable systems and consumer equipment, consistent with the need to prevent theft of cable service.[14] In this first phase of our implementation of Section 624A, we seek information on the nature and extent of the compatibility problem between cable systems and consumer electronics devices, including cable system operating technologies and practices and the extended features included in consumer equipment. In examining these issues, we request information regarding alternative approaches available to cable operators for protecting against unauthorized reception of their services. We also seek information and suggestions regarding possible alternative regulatory approaches for ensuring compatibility that will minimize costs for cable operators, consumer electronics manufacturers and consumers. The specific information we are requesting on each of these areas of inquiry is discussed in the sections which follow.

11. As indicated above, this information will be used in preparing our report to Congress on the means of ensuring compatibility between cable systems and consumer equipment and in formulating our proposals for regulations in this area. We also intend to consult with representatives of the cable television and consumer electronics industries and will also consult with other parties, as appropriate.[15]

12. Cable Technologies and Operating Practices. The first step in developing a regulatory plan for achieving compatibility between cable systems and consumer equipment is to identify the

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[14] The proper resolution of the issues in this proceeding requires a recognition and balancing of the very significant costs associated with both the redundant and incapacitated consumer electronics equipment involved and with the theft of cable service. With respect to the latter issue, we note that a recent survey by the National Cable Television Associations's Office of Cable Theft suggests that service theft results in over $4.7 billion in unrealized revenue annually. National Cable Television Association, "1992 Theft of Service Survey Results" (Dec. 1992). As the rates for cable service become subject to increased regulatory oversight under the provisions of the 1992 Cable Act, such losses become increasingly an issue of concern to cable operators as well as cable system investors. The costs associated with incompatible and unusable consumer electronics equipment may also be in the billions of dollars. We request comment on this assumption.

[15] We note, for example, that a joint cable/consumer equipment industry committee has been established by the National Cable Television Association and the Electronics Industry Association to investigate means for assuring compatibility between cable systems and consumer TV equipment.

current technologies and practices used by cable systems in delivering service to subscribers. We seek information about the technologies and practices that tend to preclude operation of the extended features of consumer equipment. We similarly seek information on technologies and practices that tend to support the operation of such features. We also request data regarding the extent to which the various types of technologies and equipment currently are used by cable systems nationwide. In particular, we ask commenting parties to address these questions:

- What technologies and technical systems do cable systems currently use to provide service to subscribers' premises?
  - -- How many channels of service are provided on a cable and what frequencies are used for delivery of those channels? In what circumstances and to what extent are dual cables used to deliver service?
  - -- What methods and technologies do cable systems use to prevent theft and unauthorized reception of service (the various scrambling and encryption systems, converter and/or descrambler units, interfering carrier systems, channel-blocking traps, addressable systems, interdiction systems, etc.)? What are the operating principles used in each of these approaches?
  - -- What proportion of cable systems (and the number and proportion of subscribers affected) use each of the available security methods and technologies? How many systems use converter units, for either security or other purposes, such as elimination of direct pick-up interference in receivers, and how many and what percentage of subscribers on those systems are using converters?
  - -- What are the costs of the existing alternative techniques for preventing theft, unauthorized reception and addressing technical performance considerations, both to cable systems and subscribers?
- What is the effect of channelization practices and security systems on the operation of extended features of television receivers, videocassette recorders and other related consumer television equipment? How does use of these techniques affect the technical performance and operations of cable systems?
- Which methods of scrambling and encryption systems do not interfere with the functions of subscribers' TV receivers, VCRs and other TV equipment?
- What types of cable converters are currently available to cable subscribers commercially from third parties?
  - -- To what extent do cable systems currently make converters and/or remote control units available for purchase by their subscribers?
- To what extent is it technically and economically feasible for cable systems to offer subscribers the

option of delivering directly to subscribers' receivers or VCRs all signals that do not need to pass through a converter?
- To what extent are cable converters or other devices used by cable systems to resolve technical problems such as signal leakage?

13. Consumer Equipment Features. We also need to develop a full understanding of the various features incorporated in consumer television receivers, videocassette recorders and other related equipment that can be affected by the manner in which cable service is delivered. In this regard, we request information and comment concerning the following:

- The features incorporated in consumer electronics equipment that can be affected by the manner of cable signal delivery.
  -- What types and portions of currently available consumer TV equipment include such features?
  -- How are these features affected by the various methods of cable signal delivery, particularly with respect to techniques and methods cable operators use to protect against theft of service?
  -- Generally, the number of cable channels that currently available "cable ready" TV receivers, VCRs and other equipment can accept tends to vary across different equipment. How many channels of cable service does currently available TV equipment accept, how does this vary across different equipment and what are the frequencies of these channels, including their associated video and aural carrier frequencies?
  -- Are any new consumer TV equipment features anticipated or expected in the foreseeable future that would pose compatibility issues different from those indicated in the 1992 Cable Act?
- What equipment other than TV receivers and VCRs are affected by the compatibility relationships addressed herein?
- The definition of a "cable compatible" or "cable ready" unit.
  -- What features should a device incorporate to be considered cable compatible or cable ready?
  -- How many channels should a device be able to receive, and in what frequency ranges should those channels be, in order to be considered cable ready or cable compatible? What other cable system operating characteristics should a device be able to accommodate to be considered cable compatible?

14. Regulatory Program for Assuring Compatibility. The above information will provide a base for understanding the nature and extent of compatibility between cable system

operations and consumer television equipment. As instructed by Congress, we intend to pay careful attention to the costs and benefits to consumers of imposing compatibility regulations on cable operators and television manufacturers. In this regard, we intend to balance the limiting effects of compatibility regulations on cable operators against the benefits those regulations provide in facilitating the operation of special features on consumer equipment. We seek to formulate our regulations so that they will accomplish the intent of the law with the least effect on opportunities for improvements in both cable system and consumer electronics equipment. In addition, we are aware of cable operators' need to protect effectively against theft or otherwise unauthorized use of their services. The compatibility rules we adopt should allow cable operators to employ cost-effective means for protecting their service from theft or other unauthorized interception and use. With these considerations in mind, we need additional information in the following areas relating to development of regulations for assuring compatibility between cable systems and consumer television equipment:

- To what extent could existing cable equipment be modified to be more compatible with TV receivers, VCRs and other consumer TV equipment (and how much would it cost and how long would it take to make the necessary changes), while still providing for adequate protection against theft of service?
- What new methods for providing cable system security are being developed, when will they be available and how much would they cost (to both consumers and cable subscribers)?
- How will new digital transmission techniques affect system security, including costs?
- What technical standards are necessary to assure that cable systems provide service in a manner that is technically compatible with the extended features of consumer TV equipment?
  -- What elements of cable system operation should be regulated to assure compatibility?
  -- What are the least costly approaches for a regulatory program that will achieve this goal while still permitting cable operators to prevent theft of service?
- To what extent, if any, should cable systems be restricted in the manner in which they encrypt or scramble their signals?
- What standards and/or operating requirements, if any, would be practical to accommodate the introduction of new technologies, such as compressed digital modulation, and still ensure that such technologies are compatible (insofar as possible) with TV receiver and VCR functions and features? In this regard, how should we reconcile

the requirements of the Act with the introduction of new technologies and what particular difficulties do we face in attempting such a reconciliation?

- What modifications could be made to existing consumer TV equipment designs to make it more compatible with the manner in which cable service is provided?
  -- Should shielding requirements be required for cable ready consumer equipment to protect against interference to cable signals from "direct pick-up" of broadcast signals and to limit unintentional radiation of cable signals by such equipment?
- What elements of consumer TV electronics equipment could be standardized to ensure compatibility with cable systems?
  -- Should consumer electronics equipment be required to be equipped with two cable input ports to accommodate dual cable systems? (Such capability would facilitate switching between cable within the consumer device, and through its remote control, and obviate the need for a separate and external input selector switch.)
- What standards should be specified as technical requirements with which TV receivers, VCRs and other consumer equipment must comply in order to be sold as cable compatible or cable ready?[16] For example, should we adopt rules regulating:
  -- The number of cable channels that can be received and the frequencies of those channels?
  -- A universal connection to enable the use of separate devices that can descramble signals encoded using alternative security techniques?
- To what extent could regulations intended to assure compatibility between cable systems and consumer television equipment also affect technical aspects of the "buy-through" provisions of Section 3 of the 1992 Cable Act?[17]

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[16] In this regard, we note that the Senate and House conferees, in drafting the 1992 Cable Act, encouraged the development of voluntary efforts by the cable industry and the manufacturers of television equipment to meet the technical requirements the Commission will adopt. See Conference Report on the Cable Television Consumer Protection and Competition Act of 1992, H.R. Report 102-862, p. 89.

[17] Section 3 of the 1992 Cable Act, which amends Section 623 of the Communications Act, generally prohibits cable operators from requiring subscribers to purchase any "tier" of service, other than the basic service tier, "as a condition of access to video programming offered on a per channel or per program basis." This is commonly referred to as the buy-through prohibition. 47 U.S.C. §543(b)(8)(A). Section 3 also provides

15. Remote Control Units. We also seek information to assist us in implementing regulations regarding remote control units. Many converter units used by cable systems provide for remote control of cable services. Cable systems typically charge a separate monthly fee for the remote control feature. The technologies used by some cable systems also permit the remote control features on their converter units to be remotely activated/deactivated by the cable operator. As indicated above, the 1992 Cable Act is much more specific about the nature of the rules to be applied to address remote control issue than it is for compatibility in other features. In this case, the legislation directs the Commission to adopt rules to: 1) promote the commercial availability of converter units and remote controls; 2) require cable systems to notify subscribers regarding commercial availability of remote controls; and, 3) prohibit actions that would prevent remote controls from operating with converter units. We therefore ask that parties submitting information and suggestions for rules regarding regulation of remote control units do so in the context of the regulatory requirements specified in Sections 624A(c)(2)(C) and (D).

16. In order to assist us in developing proposals for rules to implement the remote control provisions of Section 324A, we request information on the following topics:

- What types of remote control equipment currently are used by cable systems?
  -- To what extent is the same model of converter units provided to subscribers for both manual and remote control use?
  -- To what extent do cable operators use technical systems that allow them to disable a converter's remote control function, either through a manually invoked control on the device itself, or through an electronic signal that can be transmitted to the device from the cable headend?

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that for a period of 10 years, or until a cable system is modified to eliminate technological impediments to unbundling of pay from other tiers of service, the prohibition shall not apply to a cable system "that by reason of the lack of addressable converter boxes or other technical limitations, do not permit the operator to offer programming on a per channel or per program basis." 47 U.S.C. §543(b)(8)(A). The Commission has issued a separate Notice of Proposed Rule Making addressing regulations pertaining to the buy-through prohibition in a separate proceeding. See Notice of Proposed Rule Making in MM Docket No. 92-262, adopted December 10, 1992, FCC 92-540, released December 11, 1992.

-- What portion of the market currently rents each type of cable remote control unit?

- To what extent are remote control units that are compatible with the converter units used by cable systems available to consumers now?
  -- To what extent are the remote control features of cable converters compatible with existing commercially available remote control units, including the "universal" remote control design?
  -- What types of such units are available and how much do they cost?
  -- What portion of the market currently owns such units?
- How can the Commission best encourage the commercial availability of remote control units that are compatible with existing converter units?

17. Future Cable Television and Consumer Electronics Developments. The foregoing discussion focuses primarily on the current status of cable television and consumer electronics technology in the consumer marketplace. Information on the current situation is critical in determining how to respond to the problems identified in the 1992 Cable Act. We also seek information on likely future developments in cable television distribution techniques and consumer electronics that may be used in association of cable television reception:

- How will projected increases in cable television channel capacity affect the interface?[18] What is the likelihood that any interface would either become obsolete in a short time or inadvertently stifle technological advances?
- Will digital transmissions, including advanced television and video compression change the nature of the interface in ways that should be addressed in this proceeding?
  -- How would the use of such methods affect the operation of special features of cable subscribers' TV equipment?
- What are the implications for a standard interface arising from the digital transmission of video over common carrier networks?

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[18] See e.g., Broadcasting, December 14, 1992, p. 66 ("[fiber architecture] ... Coupled with compression, which the company anticipates will directly reach subscriber homes by the first quarter of 1994, Time Warner is preparing for systems with 500 to 600 channels."); New York Times, December 3, 1992, p. 1 ("The nation's biggest cable television company announced yesterday that as early as 1994, it would install technology that would ultimately let its customers receive as many as 500 channels.")

- How might prospects for new remote control devices providing access to program types rather than channel numbers, affect, or be affected by, this proceeding?[19]
- How will expanded receiver features, such as increased "picture-in-picture" features, be accommodated?[20] In this regard, we seek assistance in developing rules that provide the least possible obstacle to technical improvements in both cable television and consumer electronics consistent with accomplishing the stated objectives of the law.

18. Implementation Considerations/Schedule. One of the most important elements in implementing the new equipment compatibility regulations will be the schedule by which they become effective. The extent to which the implementation of our equipment compatibility rules are spread over time will significantly affect the impact of these rules on cable operators and equipment manufacturers. At the same time, we must balance the interests in minimizing the impact of this regulation on industry with the need to promote compatibility in a prompt manner. It would appear that the scheduling of some requirements, such as notification requirements, would have little impact on industry, so that those requirements could be implemented quickly. We request comment and information on the scheduling of the dates when cable systems and consumer equipment manufacturers should be required to comply with the new rules we will adopt. We note that Section 624A and the legislative history do not address the issue of the schedule for compliance with the new rules. We seek comment on the schedule for implementing all aspects of new rules in this area.

PROCEDURAL MATTERS

19. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's rules, 47 CFR Sections 1.415 and 1.419, interested parties may file comments on or before March 22, 1993, and reply comments on or before April 21, 1993. All relevant and timely comments will be considered by the Commission before taking further action in this proceeding. To file formally in this proceeding, participants must file an

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[19] See, e.g., "Discovery plans compression control," Variety, December 14, 1992, p. 22.

[20] See e.g., Communications Daily, December 17, 1992, p. 3 (Thompson Consumer Electronics receiver "has all picture tricks we've ever seen displayed on widescreen sets -- and more: 2-tuner picture-outside-picture (POP); PIP with swap, freeze, expand; channel guide, with as many as 15 pictures on screen; ....").

original and four copies of all comments, reply comment and supporting comments. If participants want each Commissioner to receive a personal copy of their comments, an original and nine copies must be filed. Comments and reply comments should be sent to Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center (Room 239) of the Federal Communications Commission, 1919 M Street, N.W., Washington, D.C. 20554.

20. For further information concerning this Notice of Inquiry, contact Bruce Franca or Alan Stillwell (202-632-7060), Office of Engineering and Technology, Federal Communications Commission, Washington, D.C. 20554.

FEDERAL COMMUNICATIONS COMMISSION

Donna R. Searcy WTC
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